

# Draft Nelson Plan – Frequently asked questions

## River flood hazard

### Why does the Council produce flood maps?

Councils identify and manage natural hazard risks under several different pieces of legislation, including the Resource Management Act (RMA), Building Act, Local Government Act, and the Civil Defence and Emergency Management Act.

It is part of the Council's role to help people understand the potential extent of flooding, both now and for predicted future generations. Modelling future river flood events out to the year 2130 and incorporating sea level rise is all part of taking the long-term view to managing river flood hazards. This in line with other Council's future river flood mapping such as Tasman, Auckland, Hutt City and Selwyn Councils.

The Council carries out its role by monitoring flood events, mapping present day and future flood events and setting rules about where buildings can be located, where subdivision can take place, and how land use is to be managed within areas affected by natural hazards, such as river flooding. Managing flood risk and other natural hazards are aspects the Council must take into account, amongst many other factors when making decisions on resource consents.

### How do we map flood hazard areas?

River flooding occurs when water spills over or breaks out from a river channel onto land that is normally dry. River flooding usually results from heavy or prolonged rainfall. In assessing flood hazard for Nelson catchments, consideration has also been given to the potential for a high tide to coincide with a stream or river flood event.

The flood maps that are being released relate to river and stream flooding only, including mapping of flow paths resulting from channel overflow. Therefore, these flood maps may not represent flooding caused by surface ponding, overflow from stormwater networks, or runoff of local stormwater prior to it reaching a stream or river.

Coastal inundation hazard has been assessed separately, and this mapping is accessible through the following Shape Nelson web page: <https://shape.nelson.govt.nz/coastal-hazards>

The flood maps are based on technical assessments, detailed topographical (LIDAR)<sup>2</sup> survey, and computer models developed by engineering consultancies Tonkin and Taylor Ltd and WSP Opus, who do this kind of assessment for councils around the country. These models and map outputs are also subject to professional peer reviews by external engineers and additional checks are made by the Council's internal engineering officers.

### What do the maps show?

The maps show the result of hydraulic flood models that illustrate:

- The maximum predicted area and depth of flooding for specific flood events.
- Flooding resulting from a 1% annual exceedance probability (AEP) rainfall event (which is a flood that has a 1% chance of occurring or being exceeded every year and is sometimes known as the 1 in 100-year flood).
- Flooding predicted under present day climate as well as for the year 2130.

- 2130 is used because a 100 + year timeframe is commonly applied for decision making under the RMA.

#### **What do the different flood overlays show?**

1. Flood hazard overlay for Nelson Urban catchments (depth is less than 30cm AND velocity is less than 2 metres per second)
2. High Flood hazard overlay for Nelson Urban catchments (depth is MORE than 30cm and/or velocity is MORE than 2 metres per second)
3. North Nelson Flood hazard overlay (only shows flood area extent)

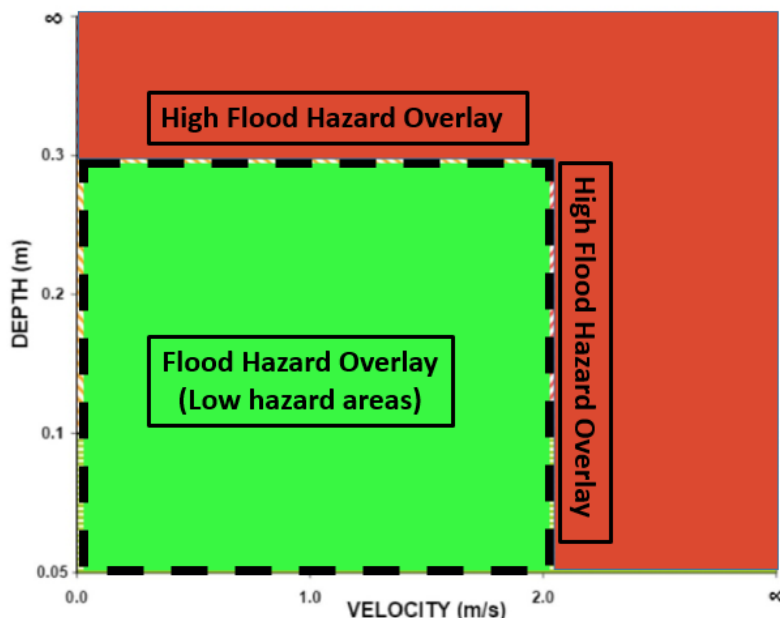
#### **Why is my property included in the flood modelling when it has never flooded at this property?**

Council has mapped the extent of the following flood scenarios – a 1% AEP (annual exceedance probability), rainfall event, often referred to as a ‘1 in 100 year flood’ for both the present day and the year 2130. This is an extreme flood event and not all areas of Nelson have experienced such a flood event to date. Many councils across New Zealand model and map a 1% AEP flood event to help inform decisions regarding future development and land uses.

#### **What determines a high flood risk area?**

The depth and speed of the flowing flood water determines the level of risk. Deep, fast flowing water has a higher risk.

The diagram below shows that if the depth is greater than 0.3m or if the velocity is greater than 2.0m per second, then it is considered a high flood hazard. At this depth and velocity, a person could be swept off their feet. A car will stop and/or float in relatively shallow water (as low as 0.5m of depth).



Flood hazard category	Floodwater depth (Urban catchments)	Floodwater speed (metres per second)	Effects on people and property
None	0-0.05m	N/A	Generally safe for people, vehicles and buildings.
Flood hazard overlay	0.05cm-0.3m	0-2.0 (m/s)	Generally safe for people, vehicles and buildings.
High flood hazard overlay	0.3-2m	2.0 (m/s) and above	Unsafe for vehicles and people. All buildings vulnerable to structural damage. Some less robust building types vulnerable to failure.
North Nelson flood hazard overlay	≥ 0.1m	≥ 0 (m/s)	Hazard level not shown but in practice will be consistent with the above categories.

#### **Why do the North Nelson flood maps look different?**

Due to the large-scale area that North Nelson covers, a different model was used. The rural catchments for the Whangamoa and Wakapuaka Rivers are all characteristically similar, whereas the urban stream catchments each have more unique characteristics. A significant point of difference is that the rural catchments in North Nelson generally lack reticulated stormwater networks, and runoff therefore travels overland towards the rivers and their tributaries. These flowpaths are therefore shown in the North Nelson mapping where they are over 0.1m in depth.

Hazard mapping has not been shown for the North Nelson models, as these catchments are predominantly rural with limited built development exposed to flood hazard. The flood models developed do calculate flow depth and speed for any point in the flood plain, so the hazard level can be readily established for any existing or new development that may be exposed to flood risk.

#### **I gave feedback in 2017 about the river flood mapping, how was that taken into account with these new maps?**

Council received nearly 450 responses to the community engagement held between 1 April and 16 June 2017. In response to the feedback, there were a number of site visits made to individual properties, and the model inputs and/or set-up of the flood models were amended in some localised areas.

In 2017, the Council also asked the question whether we should manage development differently based on the level of flood hazard. The feedback received agreed that there should be a different

approach in areas of higher flood hazard. As a result the flood maps now show two different areas of flood hazard for urban catchments.

1. Flood hazard areas (depth is less than 30cm AND velocity is less than 2 metres per second)
2. High Flood hazard (depth is MORE than 30cm and/or velocity is MORE than 2 metres per second)

### **What else has changed since 2017?**

There have been several changes to the models since 2017.

#### ***Increased timeframes***

- The 2017 models showed flooding predictions for the year 2100. Central Government guidance seeks to plan for at least 100 years and therefore the new models show predicted flooding in the year 2130.

#### ***Improved rainfall data***

- Since 2017, NIWA has updated data sets for storm rainfall depth based on additional data collected since the previous version (HIRDS v3) released in 2010.
- NIWA published updated storm rainfall profiles in August 2018, which have been adopted for the new Nelson flood assessments.

#### ***Infrastructure improvements***

- The models now also take into consideration the flood protection upgrades that Council has made to York Stream and Oldham Creek.
- It does not include infrastructure works that have not yet been completed such as Saxton Creek upgrades and only partially represents the upgrades to Orphanage stream

#### ***Increased accuracy of the river channels***

- The Council resurveyed the Maitai river channel and all bridges were physically surveyed to improve the accuracy of flood assessment.

#### ***Sea level rise component***

- The tidal component of the model has been adjusted to show a more likely situation of when a flood event might coincide with a high tide, taking into account sea level rise over time. This resulted from statistical analysis undertaken by NIWA in 2020 to determine an appropriate tidal boundary condition to use for assessment of river flood levels specifically in the Nelson context.

### ***Changes to the models***

- Two river catchments (Orchard and Orphanage Streams) were amalgamated to reduce the number of catchment models and allow for overflows between catchments to be represented, giving a more accurate result.
- Model mesh refinements were made to several of the flood models to provide a more accurate representation of overland flow paths.
- In a number of areas, models were extended where overland flowpaths had previously been truncated.
- Improvements were made across most of the models to better define the capacity for the channel and piped sections of streams, as well as the runoff characteristics of the catchment.

### **What will it mean if my property is located in a flood hazard area in the Draft Nelson Plan?**

Until the Nelson Plan is publicly notified, the existing rules in the operative Nelson Resource Management Plan (NRMP) still apply to any area that is identified in the current flood hazard overlays.

The Nelson Tasman Land Development Manual: Inundation Practice Note sets out the process for how to calculate the minimum ground and floor levels within identified flood hazard areas.

### **How can I give feedback on the Draft Nelson Plan rules?**

We are seeking your feedback on the rules in the Draft Nelson Plan. You can compare the existing rules in the NRMP to the Draft Nelson Plan rules by visiting, which has a table comparing the two Plans rules: [shape.nelson.govt.nz/nelson-plan](https://shape.nelson.govt.nz/nelson-plan).

### **Will this information go onto my property file?**

The existing flood extents shown in the NRMP and the flood hazard maps on the Council's website<sup>1</sup> that were publicly consulted on in 2017 are already included on your property file if the property is identified as being affected by river or stream flooding.

If there are any changes to your property relating to these updated flood maps, your LIMs will be updated accordingly. If you are no longer shown to be within an area shown on the flood map, the LIM will be removed from your file. There is nothing you need to do; this will occur automatically.

### **The LIDAR<sup>2</sup> base data is already years old?**

The flood models rely on using LIDAR (laser scanned mapping of the earth's surface) to create the model terrain of the catchment. LIDAR maps provide elevation or height information about the surface of the land. A LIDAR survey involves aircraft flying over the land surface, digitally scanning the land elevation. Given the high cost and complexity of this exercise, new maps are only produced periodically – every 5-10 years.

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<sup>1</sup> <http://www.nelson.govt.nz/environment/nelson-plan/natural-hazards/mapping-our-natural-hazards/>

<sup>2</sup> LIDAR stands for Light Detection and Ranging

Therefore, if there are any landform changes that have occurred either by natural or human engineering processes since the most recent LIDAR map, it will not generally be represented in the models.

This may mean that areas that have had earthworks to raise the level of land to mitigate flood effects through development, which have occurred since the most recent LIDAR map was produced in 2015, may be shown within the flood mapped area.

A LIM provides all relevant information on a property. When assessing a building, resource or subdivision consent, all relevant information is taken into account.

**Will this information affect my property value or insurance?**

We cannot advise you about any affect this information may have on your property values or insurance. In general it is expected that insurers would assess risk and premiums based on present day flood mapping as opposed to future flood mapping that incorporates climate change projections. We recommend you seek professional advice from a property valuation or insurance expert about any concerns you may have regarding these matters.

The Insurance Council website provides information on insurance cover from natural hazards, such as flooding and storms. Please check out their website: <https://www.icnz.org.nz/>

**Will I be covered by the EQC if my property is affected by flooding?**

The Earthquake Commission advises that the EQC covers:

- Homes, contents and land for landslip damage
- Land only for flood and storm damage.

Please refer to the EQC website for full details on what they cover [www.eqc.govt.nz](http://www.eqc.govt.nz)